

CLAIMS

1. An expandable endolumenal prosthesis comprising, in
5 the non-expanded configuration,
 - a tubular body extending along a longitudinal axis (1-1) and having a distal end and a proximal end,
- 10 - the tubular body having a porous wall defined by a plurality of interlaced circumferential lines forming a pathway motif or pattern, in which:
 - at least one line is closed onto itself,
- 15 - each of the lines extends along an axis (a-a),
 - each of the lines comprises at least one plurality of modules,
- 20 - each module comprises three lobes, that is, two outer lobes and one inner lobe disposed between the two outer lobes in the pathway of the pattern,

35

- each lobe comprising one or more curved sections having concavities facing in the same direction, defining an apex of the lobe,

5 - the lobes opening alternately on opposite sides of the pathway of the pattern along the extent of the line,

- both of the outer lobes of the three lobes being extended by straight outer arms,

10

- the at least one plurality of modules being arranged consecutively so as to have successive outer arms which extend from the outer lobes in substantially opposite directions relative to the pathway of the pattern for two
15 successive modules,

- and in which, for each module, the distance between the apex of one of the outer lobes and the apex of the inner lobe of the same module is less than the distance between
20 the apex of the same outer lobe and the apex of any outer lobe of an adjoining module.

2. A prosthesis according to Claim 1 in which the inner lobe of at least one module is extended by at least one
25 straight inner arm.

3. A prosthesis according to Claim 2 in which both of the ends of the inner lobe are extended by straight arms.

5 4. A prosthesis according to any one of Claims 1, 2 and 3, in which at least one of the outer arms extends along an axis which is inclined to the longitudinal axis of the tubular body and is also inclined to the axis of the line to which the module belongs.

10

5. A prosthesis according to any one of Claims 1 to 4 in which both of the outer arms of the module extend along respective axes which are inclined to the longitudinal axis of the tubular body and are also inclined to the
15 axis of the line to which the module belongs.

6. A prosthesis according to any one of Claims 1 to 5 in which the outer arms of the module extend away from the lobes along converging axes.

20

7. A prosthesis according to Claim 5 or Claim 6 in which the arms have inclinations substantially close to the direction of the longitudinal axis of the prosthesis when the prosthesis is in the non-expanded configuration.

25

8. A prosthesis according to any one of Claims 5 to 7 in which the inclination of the arms is selected in a manner such that, when the prosthesis is in the expanded configuration, the arms are arranged substantially close
5 to the direction transverse the longitudinal axis of the prosthesis.

9. A prosthesis according to any one of Claims 1 to 8 in which at least one outer arm of a module is shared with
10 the adjacent module.

10. A prosthesis according to any one of Claims 1 to 9 in which all of the outer arms of each module are shared with adjacent modules.

15

11. A prosthesis according to any one of Claims 1 to 10 in which the outer arms are of equal extent.

12. A prosthesis according to any one of Claims 1 to 11
20 in which the inner lobe is extended by two straight inner arms.

13. A prosthesis according to Claim 12 in which the inner arms are of equal extent.

25

14. A prosthesis according to any one of claims 1 to 13 in which the inner lobe is joined to the outer lobes by means of at least one inner arm.
- 5 15. A prosthesis according to any one of Claims 1 to 14 in which the inner lobe and the inner arm or arms have an overall extent less than the overall extent of the outer lobes and the respective outer arms.
- 10 16. A prosthesis according to any one of Claims 1 to 15 in which the outer and inner lobes with their outer arms and inner arms, respectively, have a non-uniform extent in a direction transverse the axis of the line.
- 15 17. A prosthesis according to any one of Claims 1 to 16 in which the outer or inner arms have an extent which varies in the modules of the same line.
- 20 18. A prosthesis according to any one of Claims 1 to 17 in which the outer or inner arms have an extent which varies in the modules disposed along the longitudinal axis of the tubular body of the prosthesis.

19. A prosthesis according to any one of Claims 1 to 18 in which the outer arms of the same module have different extents.

5 20. A prosthesis according to any one of Claims 1 to 19 in which at least one module has two inner arms of equal extent.

10 21. A prosthesis according to any one of Claims 1 to 20 in which at least one module has two inner arms of different extents.

22. A prosthesis according to any one of Claims 1 to 21 in which at least one module has a single inner arm.

15

23. A prosthesis according to any one of Claims 1 to 22 in which at least one module comprises at least one lobe comprising at least one curved section of predefined extent suitable for determining the aperture of the cell
20 which faces it.

24. A prostheses according to any one of Claims 1 to 23 in which at least one module comprises at least one lobe comprising at least one curved section of predefined extent suitable for arranging the arms substantially
25

40

parallel to the longitudinal axis of the prosthesis when it is in the non-expanded or clenched configuration.

5 25. A prosthesis according to any one of Claims 1 to 24 in which at least one module comprises at least one lobe comprising at least one curved section of predefined extent suitable for arranging the arms substantially transverse the longitudinal axis of the prosthesis when
10 it is in the expanded configuration.

26. A prosthesis according to any one of Claims 1 to 25 in which at least one module comprises at least one lobe comprising a plurality of curved sections with
15 concavities having the same orientation.

27. A prosthesis according to any one of Claims 1 to 26 in which at least one module comprises at least one lobe comprising a plurality of curved sections with
20 concavities having the same orientation and at least one interposed straight section.

28. A prosthesis according to any one of Claims 1 to 27 in which the inner lobe is joined directly to one of the
25 outer lobes.

29. A prosthesis according to any one of Claims 1 to 28 in which all of the modules of a line have identical characteristics.

5

30. A prosthesis according to any one of Claims 1 to 29 in which, in at least one line, two pluralities of modules are provided, alternating with one another so as to provide a series of a module of a first plurality and
10 a module of the second plurality.

31. A prosthesis according to any one of Claims 1 to 30 in which, in at least one line, the same module is repeated along the pathway of the line in a mirror-image
15 arrangement with respect to an axis parallel to the axis of the line.

32. A prosthesis according to any one of Claims 1 to 31 in which the prosthesis comprises lines comprising
20 several pluralities of modules.

33. A prosthesis according to any one of Claims 1 to 32 in which the prosthesis comprises three pluralities of modules.

42

34. A prosthesis according to any one of Claims 1 to 33 in which at least one module has outer lobes that are disposed at different distances from the axis of the line.

5

35. A prosthesis according to any one of Claims 1 to 34 in which, in at least one line, the pathway is interrupted so as to form an opening in the pattern suitable for the passage of an SDS guide wire.

10

36. A prosthesis according to Claim 35 in which the pathway is interrupted to an extent equal to one module.

37. A prosthesis according to Claim 35 in which the
15 pathway is interrupted to an extent equal to five lobes.

38. A prosthesis according to any one of Claims 35, 36 or 37 in which the pathway is interrupted between two connecting bridges between the line and adjoining lines.

20

39. A prosthesis according to any one of Claims 35 to 38 in which the pathway is interrupted in two adjacent lines.

43

40. A prosthesis according to any one of Claims 1 to 39 in which at least one module is substantially M-shaped and is arranged so as to have outer arms directed substantially either towards the distal end or towards
5 the proximal end.

41. A prosthesis according to any one of Claims 1 to 40 in which the axis of the line is substantially perpendicular to the longitudinal axis of the tubular
10 body.

42. A prosthesis according to Claim 41 in which the line axis is inclined to the longitudinal axis at an angle of between 5 degrees and 45 degrees and preferably between
15 10 and 30 degrees.

43. A prosthesis according to any one of Claims 1 to 42 in which the line axis is straight or circumferential.

20 44. A prosthesis according to any one of Claims 1 to 43 in which, for each line, there is at least one adjacent line which has a motif that is a mirror image of the said line with respect to an axis parallel to the axis of the line.

44

45. A prosthesis according to any one of Claims 1 to
44 in which at least one connecting element or bridge is
provided between two adjacent lines.

5 46. A prosthesis according to Claim 45 in which the
bridge defines the interlacing of the lines.

47. A prosthesis according to any one of Claim 45 to 46
in which the bridge comprises a bridge lobe.

10

48. A prosthesis according to any one of Claims 45 to 46
in which the bridge comprises two bridge lobes.

15 49. A prosthesis according to any one of Claims 45 to 46
in which the bridge comprises three bridge lobes.

50. A prosthesis according to any one of Claims 45 to 49
in which a bridge is provided between two adjacent lines,
for every five complete lobes of a line.

20

51. A prosthesis according to any one of Claims 45 to 50
in which, along the line, a bridge is provided between
two adjacent lines, for every first or second outer lobe
having the same orientation.

25

45

52. A prosthesis according to any one of Claims 45 to 51 in which a bridge is provided for every module of the line.

5 53. A prosthesis according to any one of Claims 1 to 52 in which, between two adjacent lines, a continuous closed pathway is provided, disposed between two bridges defining a cell.

10 54. A prosthesis according to Claim 53 in which a variation of the cell perimeter is provided along the longitudinal axis of the prosthesis.

15 55. A prosthesis according to any one of Claims 1 to 54 in which the prosthesis comprises an external or internal coating.

56. A prosthesis according to Claim 55 in which the coating comprises a drug.

20

57. An expandable endolumenal prosthesis comprising, in the non-expanded configuration:

25 - a tubular body extending along a longitudinal axis and having a distal end and a proximal end,

- the tubular body having a porous wall defined by a plurality of interlaced circumferential pattern lines of which at least one is closed onto itself,

5

- each of the lines extending along an axis,

- each of the lines comprising at least one series of lobes intercalated by arms, each lobe comprising at least
10 one curved section, each arm constituting a straight section,

- all of the lobes of the series of lobes opening alternately on opposite sides of the pathway of the
15 pattern, along the extent of the line,

- for every four consecutive lobes separated by three arms, one of the arms having a greater extent than the other two arms.

20